CITY OF HOLLISTER (PWS 5420030)
SOURCE WATER ASSESSMENT FINAL REPORT

August 13, 2001

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

This report, *Source Water Assessment for the City of Hollister*, describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The City of Hollister (PWS # 5420030) drinking water system consists of two ground water wells. A review of the Idaho Drinking Water Information System (DWIMS) revealed water quality information for the City of Hollister drinking water system. No volatile organic compounds (VOCs), synthetic organic compounds (SOCs), or microbial contaminants were recorded for the City of Hollister well water. The City of Hollister had some bacteria detections associated with the redwood reservoir in 1992. No confirmed bacteria detections have been recorded since the city replaced the reservoir with a glass lined steel reservoir.

From February 1995 to August 2000, arsenic was detected in three water samples collected from the well #1 and #2 manifold at concentrations ranging from 0.011 milligrams per liter (mg/l) to 0.015 mg/l. These detections are well below the current Maximum Contaminant Level (MCL) for arsenic of 0.05 mg/l. The Safe Drinking Water Act requires the United States Environmental Protection Agency (EPA) to revise the current MCL for arsenic. In January 2001, EPA published a new standard for arsenic in drinking water that requires public water supplies to reduce arsenic to 0.01 mg/l by 2006. EPA is reviewing this standard so that communities that need to reduce arsenic in drinking water can proceed with confidence that the new standard is based on sound science and accurate cost estimates.

In February 1995 and again in December 1997, selenium was detected in two water samples collected from the well #1 and #2 manifold at concentrations of 0.006 mg/l and 0.005 mg/l. These detections are well below the MCL for selenium of 0.05 mg/l. In February 1995 and again in December 1997, fluoride was detected in two water samples collected from the well #1 and #2 manifold at concentrations of 0.68 mg/l and 0.49 mg/l. These detections are well below the MCL for fluoride of 4.0 mg/l. In December 1997, barium was detected in a water sample collected from the well #1 and #2 manifold at a concentration of 0.03 mg/l, well below the MCL of 2.0 mg/l. In December 1997, chromium was detected in a water sample collected from the well #1 and #2 manifold at a concentration of 0.002 mg/l, well below the MCL of 0.1 mg/l. The inorganic chemicals (IOCs), arsenic, barium, chromium, selenium, and fluoride detected in the City of Hollister well water may be naturally occurring in the formations in which the wells were developed.

From October 1993 to December 2000, nitrate was detected in twelve water samples collected from the well #1 and #2 manifold at concentrations ranging from 5.49 mg/l to 7.43 mg/l. All twelve samples contained nitrate concentrations above 50% of the MCL for nitrate of 10 mg/l. The highest concentration of nitrate detected in the well water is approximately 75% of the MCL.

A Sanitary Survey conducted in 2000 indicated that the system was in substantial compliance with current Public Drinking Water Systems standards. In terms of total susceptibility, the City of Hollister wells rated moderate for susceptibility to IOC, VOC, SOC and microbial contamination. The moderate ratings are mainly due to aquifer properties, high countywide farm chemical use, a high percentage of local agricultural land use, and the presence of potential contaminant sources within the source water assessment area of the City of Hollister wells.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For The City of Hollister, source water protection activities should focus on carefully monitoring any spills from the potential contaminant sources listed in Table 1 of this report. Since nitrate concentrations detected in the source water approach 75% of the MCL, the City of Hollister should investigate various systems like ion exchange, reverse osmosis, or activated alumina that could be used to treat for this chemical.

Most of the source water protection designated area is outside the direct jurisdiction of the City of Hollister. Twin Falls County has a Wellhead Protection Overlay District Ordinance that can provide additional protection for areas outside of the direct jurisdiction of the City of Hollister. Partnerships with state and local agencies and industry groups should be established and are critical to success. Due to the time involved with the movement of ground water, source water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil and Water Conservation District, and the Natural Resources Conservation Service.

A community with a fully developed source water protection program will incorporate many strategies. For assistance in developing protection strategies please contact the Twin Falls Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR THE CITY OF HOLLISTER, TWIN FALLS COUNTY, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings used to develop the assessment also is attached.

Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Wellhead or source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The City of Hollister drinking water system is a community system consisting of two groundwater wells that serve approximately 180 people through 80 connections. The wells are located south of Twin Falls and just west of Highway 93 (Figure 1).

Nitrate represents the main water chemistry issue recorded for the public water system. Nitrate was detected in the well water from October 1993 to December 2000 at concentrations reaching nearly 75% of the MCL. Detections of arsenic, barium, chromium, selenium, and fluoride were recorded for the wells at concentrations well below current MCLs. The IOCs, arsenic, barium, chromium, and fluoride, detected in the City of Hollister well water may be naturally occurring in the formations in which the wells were developed. No VOCs, SOCs, or microbial contaminants were detected in the well water.

Defining the Zones of Contribution – Delineation

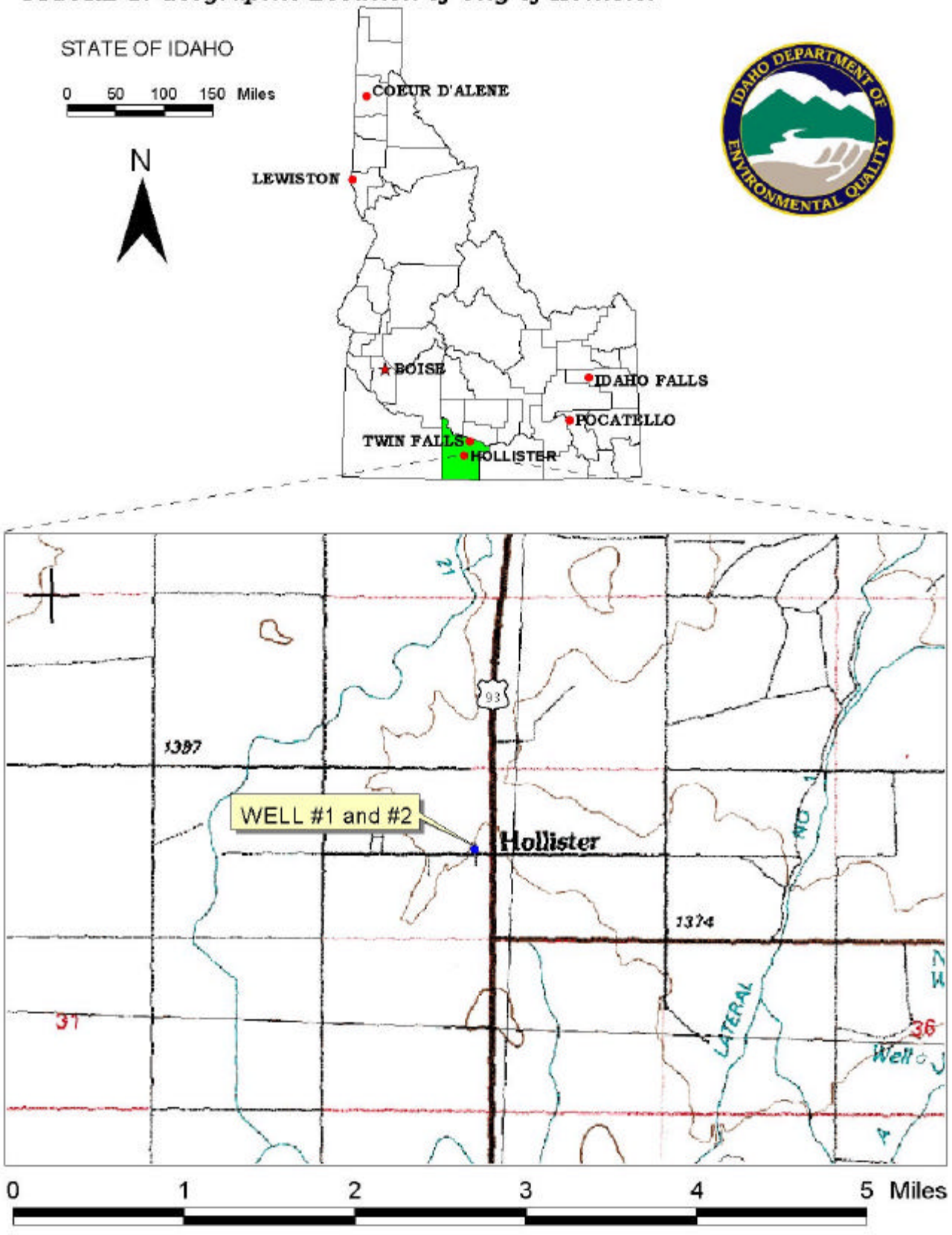
The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ used a refined computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water associated with the Snake River Plain Aquifer in the vicinity of Hollister, Idaho. The computer model used site specific data, assimilated by DEQ from a variety of sources including local area well logs and hydrogeologic reports summarized below.

The City of Hollister wells extract water from the Banbury Basalt which overlies the Idavada Volcanics. The Idavada Volcanics unit consists of welded ash and tuff, rhyolite, and some basalt flows. The Idavada Volcanics are up to 2,000 feet thick in the Hollister area and contain fractures and columnar joints, allowing some mixing of the geothermal groundwater in the Idavada Volcanics with groundwater in the Banbury Basalt (Lewis and Young, 1989). The Banbury Basalt is of variable thickness and is the primary non-geothermal aquifer in the Hollister area (Moffat and Jones, 1984). Basalt flows fracture at the surface as they cool. The fractures occur in the horizontal direction throughout the flow with localized, vertical fractures present in some areas. The Banbury Basalt is fractured and contains thin sedimentary interbeds. These fractures and sedimentary interbeds comprise the water producing zones in the Banbury Basalt. (Cosgrove, et al., 1997).

Regional ground water flow is to the north, but may vary with proximity to surface water bodies and the Snake River (Lewis and Young, 1989). Precipitation in the area is around 9 inches per year (Lewis and Young, 1989), however, a significant amount of infiltration occurs due to irrigation practices as well as canal seepage and loss from surface waters. Water leaves the area through consumptive use, loss to the Snake River, or underflow into the northern part of the Snake River Plain Aquifer (Cosgrove, et al., 1997).

The delineated source water assessment area for well #1 can best be described as a corridor, approximately 1.1 miles wide and 4.6 miles long extending to the south from the wellhead (Figure 2). The delineated source water assessment area for well #2 can best be described as a corridor, approximately 1.0 miles wide and 4.6 miles long extending to the south from the wellhead (Figure 3). The actual data used by DEQ in determining the source water assessment delineation area is available upon request.

FIGURE 1. Geographic Location of City of Hollister



Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

The dominant land use outside the City of Hollister area is agricultural. Highway 93 runs north and south through Hollister and the land outside Hollister is crossed by multiple irrigation canals. Land use within the immediate area of the wellhead consists of some commercial and residential property as well as land used for agriculture.

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination. These involve educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process

A potential contaminant inventory of the study area was conducted during May 2001. This process involved identifying and documenting potential contaminant sources within the City of Hollister Source Water Assessment Area through the use of computer databases and Geographic Information System (GIS) maps developed by DEQ.

Wells #1 and #2 have delineated source water assessment areas that contain seven identified potential sources of contamination; six in the 3-year time of travel zone (Table 1). Spills from these identified sites could potentially introduce contaminants to the aquifer and contaminate the City of Hollister drinking water. Figures 2 and 3 show the locations of these various potential contaminant sites relative to the wellhead. Highway 93 and the Lateral Canal No. 1 cross the delineated source water assessment area for wells #1 and #2.

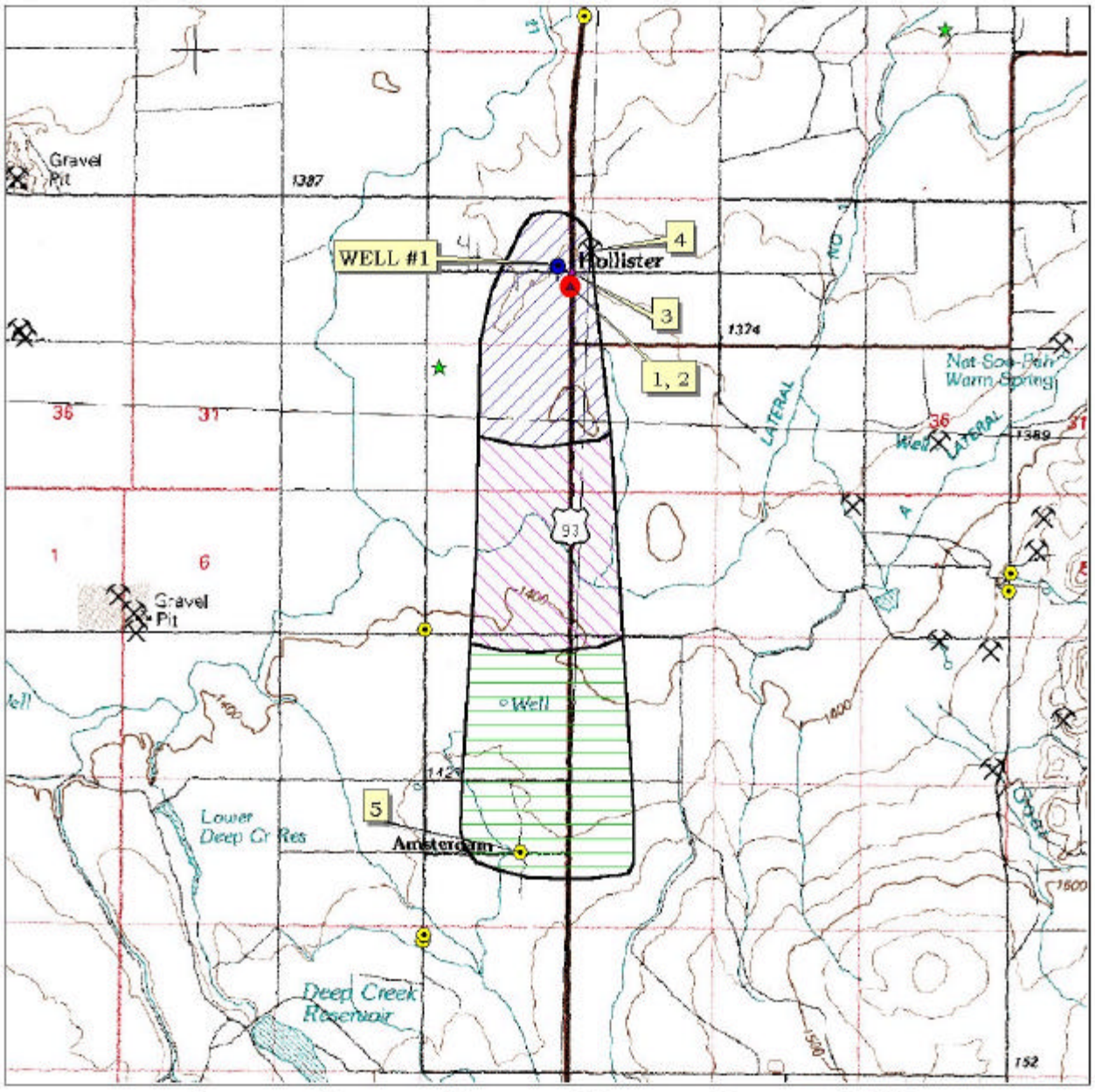
Highway 93 represents a potential source of contamination because it is a transportation corridor. Accidental releases of contaminants on this corridor, within the source water assessment area, could spill IOCs, VOCs, SOCs, or microbial contaminants on to the well-drained soil. These potential contaminants could migrate down through the fractured basalt in the vadose zone and possibly contaminate the City of Hollister source water. Similarly, the Lateral Canal No. 1 is listed as a potential contaminant source because leakage from surface waters in the source water assessment area is known to recharge the Banbury Basalt aquifer (Cosgrove, et al., 1997). Consequently, if a spill occurs and contaminants are transported through the source water assessment area by the canal, contaminants could leach into the City of Hollister source water.

Table 1. The City of Hollister, Well #1 and #2, Potential Contaminant Inventory

Site #	Source Description	TOT Zone[1] (years)	Source of Information	Potential Contaminants[2]
1	Truck Stop, cleanup completed, impact unknown	0-3	Database Search	VOC, SOC
2	Gas Station, closed	0-3	Database Search	VOC, SOC
3	Gas Station, open	0-3	Database Search	VOC, SOC
4	Sand and Gravel Pit	0-3	Database Search	IOC, VOC, SOC
5	Oil, Lubrication, wholesale	3-6	Database Search	VOC, SOC
	Highway 93	0-3, 3-6, 6-10	Database Search	IOC, VOC, SOC, Microbes
	Lateral Canal No. 1	0-3, 3-6, 6-10	Database Search	IOC, VOC, SOC, Microbes

[1] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[2] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Figure 2. City of Hollister Delineation Map and Potential Contaminant Source Locations



0 0.9 1.8 2.7 3.6 4.5 Miles

N

LEGEND

Time of Travel Zones
10 (3 yr TOT)
3 (6 yr TOT)
3 (10 yr TOT)
Wellhead
Enhanced Inventory
CERCLIS Site
RICRIS Site
Dairy
LUST Site
Closed UST Site
Open UST Site
Business Mailing List
NPDES Site
Mine
AST
Toxic Release Inventory
SARA Title III Site (EPCRA)
Recharge Point
Injection Well
Group1 Site
Cyanide Site
Landfill
Wastewater Land App. Site

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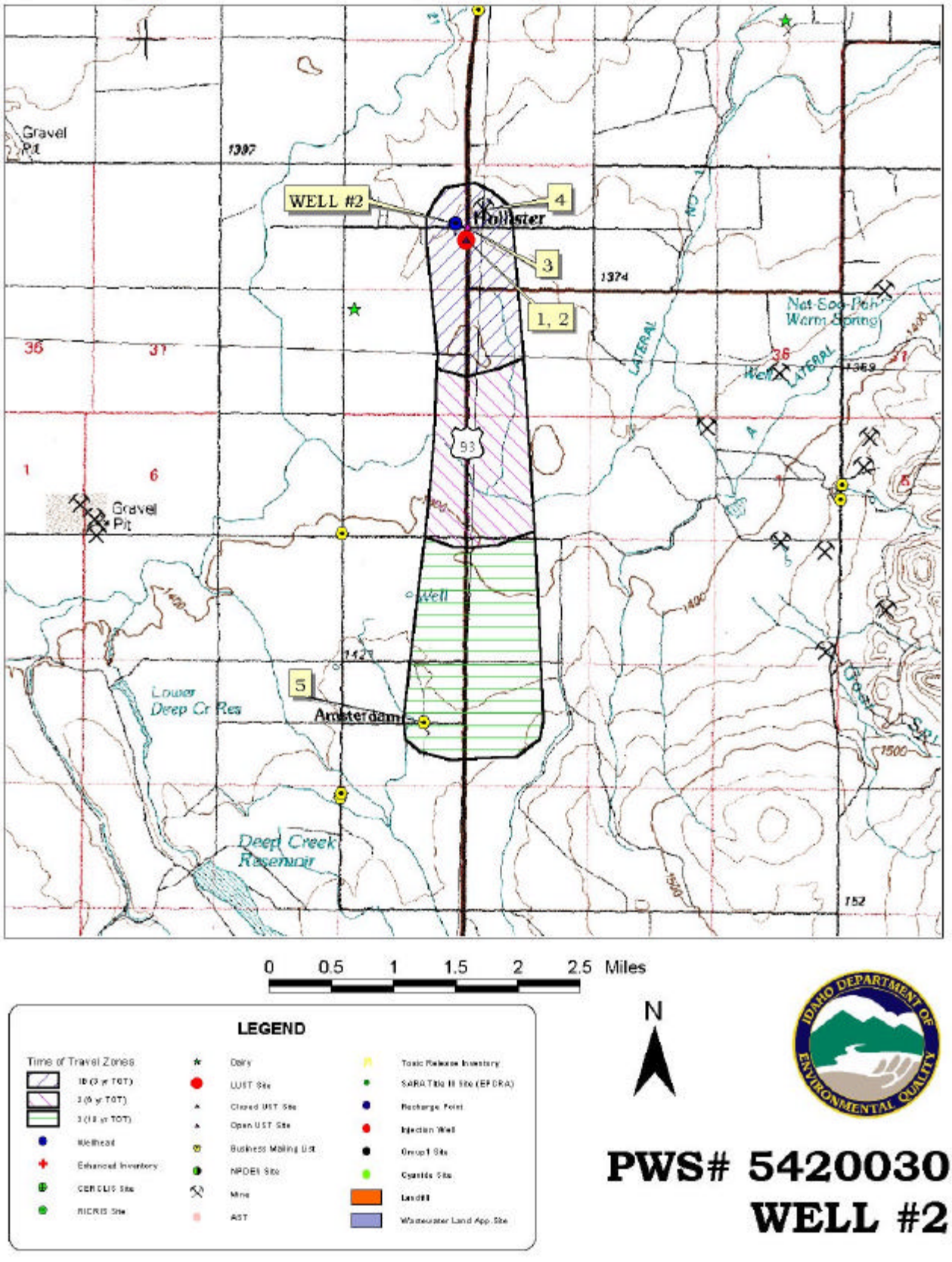
PWS# 5420030
WELL #1

Figure 3. City of Hollister Delineation Map and Potential Contaminant Source Locations



Section 3. Susceptibility Analyses

The water system's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

Hydrologic sensitivity to potential contaminants was high for the City of Hollister wells (Table 2). This reflects the nature of the soils being in the well-drained to moderately-drained class, the vadose zone (zone from land surface to the water table) being made predominantly of fractured basalt, and the first ground water being located within 300 feet of ground surface, all of which makes the wells susceptible to potential contaminants. The two City of Hollister wells do not contain at least 50 cumulative feet of low permeability units that could retard downward movement of contaminants.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. The City of Hollister drinking water system consists of two wells that extract ground water for domestic use. The system construction score was low for the two City of Hollister wells. A Sanitary Survey was conducted in 2000 and determined that the wells were in substantial compliance with wellhead and surface seal standards. The wells are not in the 100-year flood zone and are protected from surface flooding.

Well logs for the City of Hollister wells show that the casings and annular seals of both wells extend into low permeability units. Additionally, the greatest water production zones for both wells are 100 feet below the static water level, providing protection of the source water from potential downward migrating contaminants. Well #2 meets all current well construction standards. Well #1 meets all current well construction standards with one exception. The required casing thickness for a 12-inch diameter casing is currently 0.375 inches. Well #1 was installed with 12-inch diameter casing with a thickness of 0.312 inches, which was adequate at the time the well was originally installed. The IDWR Well Construction Standards Rules (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the Recommended Standards for Water Works (1997) during construction.

Potential Contaminant Sources and Land Use

The two City of Hollister wells rated high (Table 2) for potential contaminant sources and land use for IOCs (e.g., nitrates), VOCs (e.g., petroleum products), and SOCs (e.g., pesticides). Agricultural land use, high countywide chemical use, the presence of a nitrate priority area, and the presence of potential contaminant sources within the delineated source water assessment area contributed to the high rankings. The two City of Hollister wells rated low (Table 2) for potential contaminant sources and land use for microbial contamination (e.g., total coliform). These ratings are due to the fact that potential microbial contaminant sources in the delineated source water areas are less numerous than for IOCs, VOCs, and SOCs.

Final Susceptibility Ranking

A detection above a drinking water standard MCL or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0 to 3-year time of travel zone (Zone 1B) and a large percentage of agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, the two City of Hollister wells rate moderate for susceptibility to IOC, VOC, SOC, and microbial contamination (Table 2). These moderate rankings are due to aquifer properties, agricultural land use in the source water assessment area, high countywide farm chemical use, and the presence of potential contaminant sources in the source water assessment area.

Table 2. Summary of the City of Hollister Wells Susceptibility Evaluation

Well	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	**Final Susceptibility Ranking**			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well #1	H	H	H	H	L	L	M	M	M	M
Well #2	H	H	H	H	L	L	M	M	M	M

[1]H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Susceptibility Summary

Nitrate represents the main water chemistry issue recorded for the public water system. Nitrate was detected in the well water from October 1993 to December 2000 at concentrations reaching nearly 75% of the MCL. Detections of arsenic, barium, chromium, selenium, and fluoride were recorded for the wells at concentrations well below current MCLs. The IOCs, arsenic, barium, chromium, and fluoride, detected in the City of Hollister well water may be naturally occurring in the formations in which the wells were developed. No VOCs, SOCs, or microbial contaminants were detected in the well water.

A nitrate priority area crosses the delineated source water area for the City of Hollister wells. Countywide farm chemical use is considered high in this area and the delineated source water area for the wells are surrounded by a significant amount of agricultural land. Additionally, potential sources of contamination exist in the delineated source water area.

Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective source water protection program is tailored to the particular local source water protection area. A community with a fully developed source water protection program will incorporate many strategies. Since nitrate concentrations detected in the source water approach 75% of the MCL, the City of Hollister should

investigate various systems like ion exchange, reverse osmosis, or activated alumina that could be used to treat this chemical.

Though water quality is generally good for The City of Hollister, the highly fractured nature of the basalt aquifer could lead to cross-contamination from shallower fractures to deeper fractures. Any surface releases from the potential contaminant sources listed in Table 1 of this report should be monitored to prevent contaminants from infiltrating to the ground water producing zones. Most of the designated source water protection areas are outside the direct jurisdiction of the City of Hollister. Twin Falls County has a Wellhead Protection Overlay District Ordinance that can provide additional protection for areas outside of the direct jurisdiction of the City of Twin Falls. Partnerships with state and local agencies and industry groups should be established and are critical to success. Continued vigilance in keeping the well protected from surface flooding can also keep the potential for contamination reduced. Due to the time involved with the movement of ground water, wellhead protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil and Water Conservation District, and the Natural Resources Conservation Service.

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Twin Falls Regional DEQ Office (208) 736-2190

State DEQ Office (208) 373-0502

Website: http://www2.state.id.us/deq

Water suppliers serving fewer than 10,000 persons may contact John Bokor, Idaho Rural Water Association, at 1-800-962-3257 for assistance with wellhead protection strategies.

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as "Superfund" is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

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Attachment A

The City of Hollister Susceptibility Analysis Worksheet

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

Ground Water Susceptibility Report Public Water System Name : HOLLISTER CITY OF Well# : WELL #1
Public Water System Number 5420030 7/5/01 4:03:30 PM

1. System Construction		SCORE			
Drill Date	1/18/78				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	2000			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	YES	0			
Highest production 100 feet below static water level	YES	0			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		1			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		6			
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	DRYLAND AGRICULTURE	1	1	1	1
Farm chemical use high	YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		3	1	3	1
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	3	6	6	2
(Score = # Sources X 2) 8 Points Maximum		6	8	8	4
Sources of Class II or III leacheable contaminants or	YES	2	5	5	
4 Points Maximum		2	4	4	
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	0	0
Land use Zone 1B	Greater Than 50% Non-Irrigated Agricultural	2	2	2	2
Total Potential Contaminant Source / Land Use Score - Zone 1B		12	14	14	6
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	25 to 50% Irrigated Agricultural Land	1	1	1	
Potential Contaminant Source / Land Use Score - Zone II		4	4	4	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0
Cumulative Potential Contaminant / Land Use Score		21	21	23	7
4. Final Susceptibility Source Score		11	11	12	10
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility Report Public Water System Name : HOLLISTER CITY OF Well# : WELL #2
Public Water System Number 5420030 7/5/01 4:03:30 PM

1. System Construction		SCORE				
Drill Date		8/8/89				
Driller Log Available		YES				
Sanitary Survey (if yes, indicate date of last survey)		YES	2000			
Well meets IDWR construction standards		YES	0			
Wellhead and surface seal maintained		YES	0			
Casing and annular seal extend to low permeability unit		YES	0			
Highest production 100 feet below static water level		YES	0			
Well located outside the 100 year flood plain		YES	0			
	Total System Construction Score		0			
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained		NO	2			
Vadose zone composed of gravel, fractured rock or unknown		YES	1			
Depth to first water > 300 feet		NO	1			
Aquitard present with > 50 feet cumulative thickness		NO	2			
	Total Hydrologic Score		6			
3. Potential Contaminant / Land Use - ZONE 1A			IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	DRYLAND AGRICULTURE		1	1	1	1
Farm chemical use high		YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A		NO	NO	NO	NO	NO
	Total Potential Contaminant Source/Land Use Score - Zone 1A		3	1	3	1
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)		YES	3	6	6	2
(Score = # Sources X 2) 8 Points Maximum			6	8	8	4
Sources of Class II or III leacheable contaminants or		YES	2	5	5	
4 Points Maximum			2	4	4	
Zone 1B contains or intercepts a Group 1 Area		YES	2	0	0	0
Land use Zone 1B	Greater Than 50% Non-Irrigated Agricultural		2	2	2	2
	Total Potential Contaminant Source / Land Use Score - Zone 1B		12	14	14	6
Potential Contaminant / Land Use - ZONE II						
Contaminant Sources Present		YES	2	2	2	
Sources of Class II or III leacheable contaminants or		YES	1	1	1	
Land Use Zone II	25 to 50% Irrigated Agricultural Land		1	1	1	
	Potential Contaminant Source / Land Use Score - Zone II		4	4	4	0
Potential Contaminant / Land Use - ZONE III						
Contaminant Source Present		YES	1	1	1	
Sources of Class II or III leacheable contaminants or		YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of		NO	0	0	0	
	Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0
Cumulative Potential Contaminant / Land Use Score			21	21	23	7
4. Final Susceptibility Source Score			10	10	11	9
5. Final Well Ranking			Moderate	Moderate	Moderate	Moderate